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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/040,917	01/09/2002	Mark Khesin	59589.000040	3781
21967	7590	09/15/2004		
HUNTON & WILLIAMS LLP INTELLECTUAL PROPERTY DEPARTMENT 1900 K STREET, N.W. SUITE 1200 WASHINGTON, DC 20006-1109			EXAMINER OLSEN, KAJ K	
			ART UNIT 1753	PAPER NUMBER

DATE MAILED: 09/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/040,917

Applicant(s)

KHESIN ET AL.

Examiner

Kaj K Olsen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 June 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) 32-37 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-31 and 38-41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Claims 32-37 remain withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim.

Election was made **without** traverse in Paper dated 2-9-2004.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-31 and 38-41 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
4. The examiner has withdrawn the previous rejections for claim 1 in view of the amendment to it. However, the rejection of claim 31 remains because the applicant hasn't either amended away the indefiniteness, nor explained why the rejection was improper. The examiner asks again, what is the metes and bounds of "of the same type"? Clarification is requested.
5. In addition, the new limitations of claims 1 and 31 introduce new grounds of indefiniteness. In particular, what is the "associated time constant" specifically referring to? Is a time constant for permeability, for electrical response, etc?
6. In new claims 38 and 39, the applicant gives an equation that is supposed to be used for determining the time constants for the electrodes. These limitations are confusing for a couple of reasons. First, applicant never defines in the claim what these various variables are (e.g. what

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does C_E , C_C , ΔC_C , t , and T_C even represent?), nor does the applicant even explain how this equation is to be used. Second, the use of "is calculated" in the claims is confusing. Namely, it doesn't appear that this limitation is structurally further limiting anything.

7. In new claims 40 and 41, it is unclear how the "flexible hose" cooperates with any of the other set forth structural elements.

Claim Rejections - 35 USC § 103

8. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

9. Claims 1-10, 15-18, 20-27, 29, 30 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reber (USP 4,944,861) in view of Kimura et al (Principles and Development of a Thick-Film Zirconium Oxide Oxygen Sensor, pp. 101-120, from ACS Symposium Series 309, 1986). Kimura is being cited and relied on for the first time with this office action. Its use here was necessitated by the amendment to claims 1 and 31.

10. Reber set forth all the limitations of the claims (see previous office action), but did not explicitly recite that the two electrodes have different associated time constants. For the purpose of examination, the examiner will presume that a gas diffusion coefficient difference would read on the claimed time constant difference because a diffusion coefficient difference would change the amount of time two electrodes could respond to any concentration changes. This interpretation would appear to be supported by paragraph 0045 of the present invention where changes in the amount of porous material over each electrode is construed as being a time constant change. However, it is notoriously old in the art to coat an electrode in an exhaust gas

space with a protective layer to prevent premature failure of the electrodes. It is unnecessary to coat the reference electrode because it is not exposed to a harsh gas environment. In particular, this is demonstrated by Kimura et al where the measuring electrode is coated with a protective layer while the reference electrode is not (fig. 1, 2, 7, and 8). Kimura further goes on to disclose that each of the electrodes has a differing response to exhaust gas. See tables I and II where the measuring electrode and reference electrodes are governed by different equations. In particular, notice that the measuring electrode is a function of diffusion coefficient for the protective layer ($D_{O_2(PL)}$) whereas the reference electrode is not. It would have been obvious to one of ordinary skill in the art at the time the invention was being made for Reber to include a porous protective layer to the measuring electrode (as taught by Kimura) in order to avoid premature failure of the measuring electrode. As discussed above, the use of a porous protective layer would result in a different associated time constant for each electrode (namely it would take gas molecules longer to get to the measuring electrode than to the reference electrode).

11. With respect to new claim 38, calculating the time constant using the specified equation is only the intended use of the apparatus and the intended use need not be given further due consideration in determining patentability.

12. Claims 10, 13, 14, 19, 31 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reber and Kimura in further view of Yokota et al (USP 6,254,749 B1).

13. These claims are rejected over Reber, Kimura and Yokota for the reasons set forth for Reber and Yokota in the previous office action.

14. With respect to new claim 38, calculating the time constant using the specified equation is only the intended use of the apparatus and the intended use need not be given further due consideration in determining patentability.
15. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Reber, Kimura and Yokota as applied to claim 11 above, and further in view of Takahashi et al (USP 5,705,129).
16. This claim is rejected over Reber, Kimura, Yokota and Takahashi for the reasons set forth for Reber, Yokota and Takahashi in the previous office action.
17. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Reber and Kimura in view of Maeda et al (USP 4,430,192).
18. Claims 31 and 39 are rejected in the alternative under 35 U.S.C. 103(a) as being unpatentable over Reber, Kimura and Yokota in further view of Maeda.
19. These claims are rejected over Reber, Kimura and Maeda (with or without the teaching of Yokota) for the reasons set forth in the previous office action. The examiner has withdrawn the alternate rejection of claims 1-30 because the claims are clearly drawn to the gas sensor itself and the combustor is now clearly intended use.
20. With respect to new claim 39, calculating the time constant using the specified equation is only the intended use of the apparatus and the intended use need not be given further due consideration in determining patentability.
21. Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over Reber and Kimura as applied to claim 1 above, and further in view of EP 0 120 423 A1.

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22. Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Reber, Kimura and Yokota (with or without Maeda) as applied to claim 31 above, and further in view of EP 0 120 423 A1.

23. The references set forth all the limitations of the claims, but did not explicitly teach the use of a flexible hose. However, the claimed flexible hose reads on a jacketed cable, which is conventional in the art. In particular, this is shown by EP '423 where a jacketed cable 103 is utilized to house the various electrical wires that connect the sensor to its electrical circuitry. See fig. 6 and p. 8, lines 21-23. It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize a jacketed cable as taught by EP '423 for the sensor or system of Reber and Kimura (with or without Yokota or Maeda) because a jacketed cable would keep all the wires together thereby minimizing any tangling of the wires. With respect to the hose being "flexible", cables are typically flexible so as to allow the sensor to move freely during installation.

Response to Arguments

24. Applicant's arguments filed 6-22-2004 have been fully considered but they are not persuasive. Applicant urges that Reber doesn't teach the claimed subject matter because the electrodes are only mentioned in the claims. This argument is entirely without merit. The claims of Reber are part of its disclosure and were published at the same time as the rest of the disclosure. If the applicant is instead implying that Reber is not enabling because the electrodes are only mentioned in the claims (contrary to the enablement conclusion reached by the USPTO), applicant will have to more specifically state why applicant is of that conclusion and

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why the USPTO was in error with its determination of enablement. Applicant's other arguments appear to concern the new limitations of claims 1 and 31 which are rendered moot by the new teaching of Kimura (see above).

Conclusion

25. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kaj Olsen whose telephone number is (571) 272-1344. The examiner can normally be reached on Monday through Thursday from 5:30 A.M. to 3:00 P.M. and on alternate Fridays.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen, can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AU 1753
September 10, 2004



KAJ K. OLSEN
PRIMARY EXAMINER